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TWO NEW SPECIES OF TARPHIUS ERICHSON (COLEOPTERA, COLYDIIDAE) AND A NEW SPECIES OF MNIOPHILOSOMA WOLLASTON (COLEOPTERA, CHRYSOMELIDAE) FROM THE AZORES

By G. GILLERFORS *

With 17 figures

ABSTRACT. *Tarphius azoricus* sp. n., *T. acuminatus* sp. n. and *Mniophilosoma obscurum* sp. n. are described from the Azores. Discussion of diagnostic characters of *Tharphius azoricus* and the genus *Mniophilosoma* are given. A revised key to the Azorean species of *Tarphius* is provided.

RESUMO. *Tarphius azoricus* sp. n., *T. acuminatus* sp. n. e *Mniophilosum obscurum* sp. n. são descritos dos Açores. Dá-se uma discussão dos caracteres diagnósticos de *Tarphius azoricus* e do género *Mniophilosum.* Apresenta-se uma chave das espécies açoreanas do género *Tarphius.*

INTRODUCTION

Accompanied by my friend Dr Tornwall I visited the Azores for a second time in the summer of 1985. In my previous paper (Gillerfors 1985) I described two new species of *Tarphius* from the Azores. In the present paper two more species are described. One of them, found at Furnas on São Miguel and mentioned in my paper (1985, p. 6) and later collected also on Flores and Pico, is now considered to be a distinct species. Six species of *Tarphius* are now recorded from the Azores. On the central plateau of Flores, the small, westernmost island of the archipelago I also found an undescribed species of *Mniophilosoma.*

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Tarphius azoricus sp. n.

Figs. 1, 3, 5, 7.

Type locality. The Azores, São Miguel, Furnas.

Type material. Holotype ♂, the Azores, São Miguel, Furnas, 28. VII.1983 (G. Gillerfors). In Museu Municipal do Funchal, Madeira. — Paratypes: Same data as holotype, 29 exx.; same data but 8.VI.1985, 6 exx.; same data but 12.VI.1985, 9 exx.; São Miguel, Pico Longo, 12.VI.1985, 5 exx.; same data but 8.VIII.1983, (A. Törnvall), 5 exx.; Pico, Lagoa do Caiado, 27.VI.1985 (G. Gillerfors), 2 exx.; same data but (A. Törnvall), 2 exx.; Flores Cedros, Alagoa, 14.VI.1985, 4 exx.; Flores, Lomba, Rib. Funda, 16.VI.1985, (G. Gillerfors), 2 exx. Paratypes deposited in coll. Gösta Gillerfors, Varberg and Anders Törnvall, Gothenburg, Sweden.

Diagnosis. Very similar to *wollastoni* Crotch, but separated from that species by more strongly rounded sides of pronotum, more sharply pronounced humeral angles of elytra, somewhat different shape of setae and by the structure of aedeagus (fig. 7).

DESCRIPTION

T. azoricus is very similar to *wollastoni* Crotch and most characters given for that species (Gillerfors 1985) are the same as for *azoricus*. Here only characters which separate the two species are given.

Size, same as *wollastoni.*

Head as in *wollastoni.*

Pronotum. Sides noticeably less rounded, index width in middle : width at hind angles on an average = 1.14 (in *wollastoni* 1.30).

Elytra. Humeral angle sharply pronounced, anterior margin near shoulder markedly sinuate (fig. 3). In *wollastoni* margin more oblique and only faintly sinuate and humeral angle more rounded off (fig. 4). Elytral nodules on an average less pronounced. Setae as on pronotum somewhat broader with more obtuse apex, of about same shape as in *depressus* (figs. 5, 6).

Aaedeagus (fig. 7) very similar to that of *depressus* but easily distinguished from *wollastoni* (Gillerfors 1985). The spoon-like apical portion of flagellum less narrowed posterad than in *depressus.*

BIONOMICS

Found under bark of dead trunks and branches of different trees.

DISCUSSION

Azoricus is closely related to both *depressus* and *wollastoni.* The separation of *azoricus* from *wollastoni* is somewhat difficult due to their similarity coupled with intra-specific variation. The size is variable and

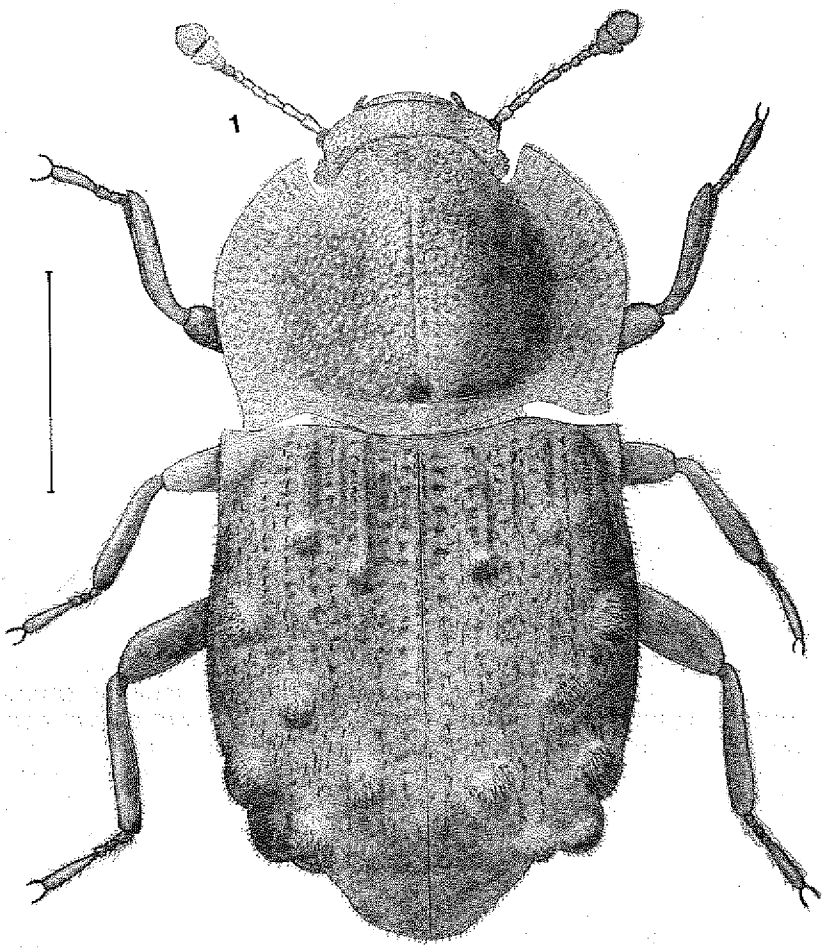

Fig. 1. — *Tarphius azoricus* sp. n. (Scale bar : 1 mm)

thus allometric growth affecting e. g. the shape of the elytral nodules is pronounced. But a careful examination of the combination of the three important characters: the rounding of the pronotum, the shape of the humeral angles and the shape of the setae makes it always possible to distinguish them. As *azoricus* lives together with *wollastoni* on Flores it cannot be treated as a subspecies. Possibly it may only be a variety, but in spite of a certain variation of the external characters there are always evident differences between the two forms. After examination of a great number of specimens I have considered it justifiable to treat *azoricus* as a distinct species.

Depressus is only found on S. Maria, *azoricus* on S. Miguel, Pico and Flores and *wollastoni* only on Flores. No specimens of *wollastoni* could be found on Faial. As S. Maria is the oldest of the islands and situated in the south east of the archipelago it is possible that the first examples of *Tarphius* arrived at that island and became the ancestor of the genus in the archipelago. *Depressus* could therefore be the oldest of the three species and *wollastoni* the youngest as it inhabits the westernmost island. A support for this theory could be that the elytral nodules on an average are least developed in *depressus* and most so in *wollastoni*.

As mentioned in my paper (1985) there is some uncertainty as to the type locality of *wollastoni*. After my second excursion to the Azores I am now inclined to choose Flores instead of Faial.

Tarphius acuminatus sp. n.

Figs. 2, 8.

Type locality. The Azores, Pico, Cabecinhos.

Type material. Holotype ♂, The Azores, Pico, Cabecinhos, 27.7.1985 (G. Gillerfors). In Museu Municipal do Funchal, Madeira. — Paratypes: Same data as holotype (G. Gillerfors), 4 exx.. In coll. Gösta Gillerfors, Varberg, Sweden; same data (A. Törnvall), 2 exx., in coll. Anders Törnvall, Gothenburgh, Sweden.

Diagnosis. Recognized by its rather small, convex body in combination with uniformly and moderately rounded sides of pronotum, sharply protruding hind-angles of pronotum, small indistinct elytral nodules, needle-like setae and structure of aedeagus (fig. 8).

DESCRIPTION

Length 2.5 - 3.0 mm, width 1.2 - 1.4 mm.

Colour of body rufopiceous, appendages yellow reddish.

Head. Sides in front of eyes converging, front margin faintly rounded. Surface laterally in front of eyes somewhat elevated, delimited by oblique depressions and surface with distinct small granules, except anteriorly. Eyes small and only slightly protruding. Antennae rather short and robust. Segments 2 and 4 subequal in length, evidently shorter than 3, 5 shorter than 4, 6 to 9 subequal in length and each shorter than 5. Pronotum about 1.4 times as broad as long. Greatest width in middle. Sides uniformly and moderately rounded with small incisions just before hind-angles, these very angulate and somewhat projecting backwards. Front angles strongly and sharply protruding. Sides not deplanate, anteriorly with a small rather deep fovea. Disc rather convex, longitudinal furrow narrow and rather distinct. Transversal furrow at base distinct. Granules small and flattened with fine hair-like semi-erect setae. Setae at side-margin standing out, rather long and needle-like.

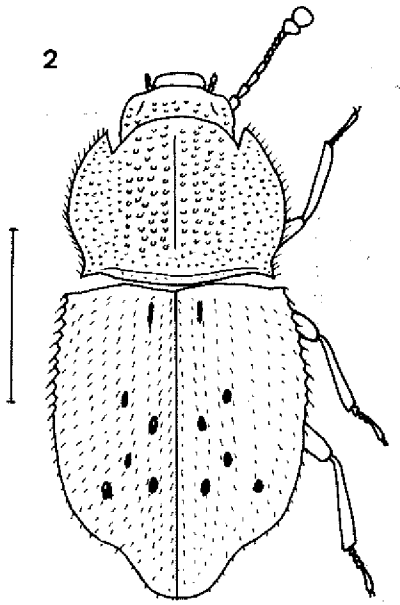

Fig. 2. — *Tarphius acuminatus* sp. n. (Scale bar : 1 mm)

Elytra about 1.2 times as broad as long. Greatest width slightly before middle. Base of elytra laterally not sinuate, almost straight, shoulders rounded off. Disc strongly convex, striae coarsly punctate in almost regular rows. Punctures in adjacent striae confluent, interspaces elevated causing transverse rugosity. Nodules in same order as in other Azorean species, very small and indistinct. Surface with sparse semi-erect hair-like setae. Setae at side-margin anteriorly rather long and needle-like.

BIONIMICS

Collected by sifting debris and decaying branches in partly deciduous forest consisting mainly of *Laurus*-trees.

REVISED KEY TO THE AZOREAN SPECIES OF *TARPHIUS*

1. Body surface sparingly covered with short and broad obtuse setae about twice as long as broad. Elytra with pale pattern enclosing nodules. Aedeagus (Gillerfors 1985) ... ... *rufonodulosus* Israelson 1
— Body surface rather densly covered with rather long, more acute setae, at least 3 times as long as broad. Elytra unicoloured 2
2. Body depressed. Sides of pronotum straight behind middle, only slightly narrowed posteriorly. Elytral setae almost decumbent. Aedeagus (Gillerfors 1985) ... ... *depressus* Gillerfors

— Body convex. Sides of pronotum with at least a short sinuation before hind angles, distinctly narrowed posteriorly. Elytral setae semi-erect or erect 3

3. Body with needle-like setae 4

— Body with rather broad setae (Except very small specimens of *wollastoni*, but then pronotum rather broad and hind-angles not sharply protruding) 5

4. Pronotum distinctly narrower than elytra. Hind-angles not sharply protruding. Elytral nodules small but distinct. Aedeagus (Gillerfors 1985) ... ...

Mniophilosoma obscurum sp. n.

Figs. 9, 10, 12, 14, 16.

Type locality. The Azores, Flores, Caldeira Comprida.

Type material. Holotype ♂, the Azores, Flores, Caldeira Comprida, 15.VI.1985, (G. Gillerfors). In Museu Municipal do Funchal, Madeira. — Paratypes: Same data as holotype (G. Gillerfors), 1 ♂, 8 ♀, In coll. G. Gillerfors, Varberg, Sweden; same data (A. Törnvall), 2 ♀, in coll. Anders Törnvall, Gothenburg, Sweden.

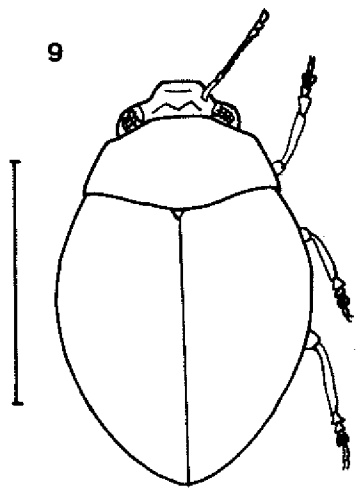

Fig. 9. — *Mniophilosoma obscurum* sp. n. (Scale bar : 1 mm)

Diagnosis. Very similar to the Madeiran *laeve* Wollaston, that is, body-form suborbiculate-ovate, exceedingly convex, but easily separated from that species by rather strong microsculpture of upper surface; by being apparently glabrous and impunctate and by structure of male genitalia (fig. 14, 16).

DESCRIPTION

Length 1.6 mm, width 1.0 mm.

Colour of head rufous, pronotum black - rufopiceous, elytra black - rufopiceous, apex with ill defined yellowish red colour extending along side - margin to near middle, antennae yellow, outer segments slightly

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Figs. 3-8: 3. — Humeral angle of *T. azoricus* sp. n. 4 — Humeral angle of *T. wollastoni*. 5. — Elytral seta of *T. azoricus* sp. n. 6 — Elytral seta of *T. wollastoni*. 7 — Aedeagus of *T. azoricus* sp. n. 8. — Aedeagus of *T. acuminatus* sp. n.

infuscated, legs rufotestaceus, tarsi somewhat infuscated, epipleura of elytra rufous, prosternum rufobrunneus, mesosternum almost black, hind-margin of 1st sternite and rest of abdomen yellowish red.

Head strongly microreticulate with small isodiametric meshes. Eyes large, about of same size as in *laeve*. Frontal furrow more strongly arched than in *laeve*. Antennae with more evident club than in *laeve* (figs. 10, 11). Pronotum conical, about 1.5 times wider at base than in front, 1.8 times as wide as long, strongly convex. Front- and side-margins with thin carina. Front-angles obtuse, hind-angles acuminate and hind-margin bisinuate. Upper surface with evident microsculpture consisting of small almost isodiametric meshes and with very obsolete, shallow and sparse punctures. Elytra strongly arched, suborbiculate - ovate, about as long as wide. Greatest width somewhat before middle. Surface with sparse extremly small punctures in very indistinct rows and with scattered extremely fine hairs only seen under high magnification (150 x). Microsculpture evident, especially in females, consisting anteriorly of almost isodiametric meshes, posteriorly of elogante meshes.

Hind-wings completely absent.

Hind femora not broader than middle femora (as in *laeve*), indicating want of leaping ability.

Male. First segment of all tarsi conspicuously dilated (figs. 12, 13). Aedeagus. In ventral view (fig. 14) apex obtuse, in *laeve* more acuminate (fig. 15). In lateral view (fig. 16) apex straight, in *laeve* apex bent (fig. 17).

BIONOMICS

The specimens were collected by sifting tussocks of *Sphagnum* moss, *Calluna* debris and under *Juniperus* shrubs on a rather moist and cold moor-like plain about 590 m above sea level.

Most probably an endemic species.

DISCUSSION

Wollaston erected the genus *Mniophilosoma*. In Insecta Maderensia (1854, p. 453 - 454) he discusses the differences between this genus and the continental genus of *Mniophila* Stephens. Apparently his taxon is separated from *Mniophila* in some significant characters such as different shape of the frontal furrow and the 8th antennal segment not being smaller than the 7th. Further, the hind femur is not broader than the middle femur and the hind tibia lacks the apical spine. Because of these

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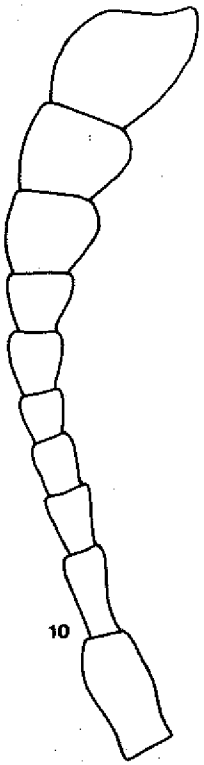
Figs. 10-17: 10. — Antenna of *M. obscurum* sp. n. 11. — Antenna of *M. laeve*. 12. — — Fore tarsus of *M. obscurum* sp. n. 13. — Fore tarsus of *M. laeve*. 14 — Aedeagus in ventral view of *M. obscurum* sp. n. 15. — Aedeagus in ventral view of *M. laeve*. 16. — Aedeagus in lateral view of *M. obscurum* sp. n. 17. — Aedeagus in lateral view of *M. laeve*.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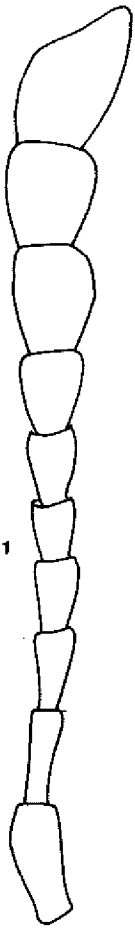
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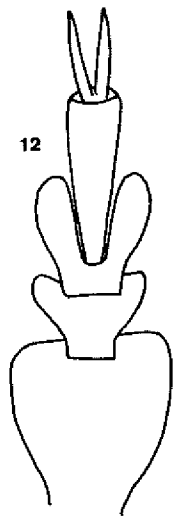
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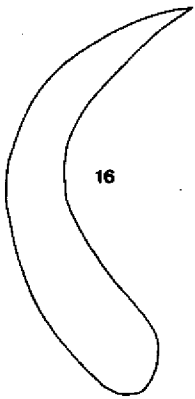
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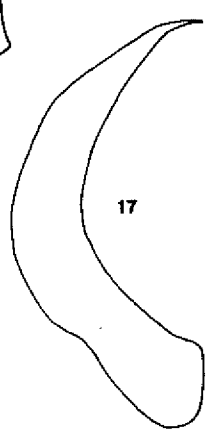
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differences it may be justifiable to maintain *Mniophilosoma* as a valid genus. See also Jansson (1940, p. 45-46).

The Madeiran *laeve* and *obscurum* seem to be very closely related. They live in about the same type of habitat, i. e. rather moist and cool localities. It is interesting to note that the continental *Mniophila muscorum* (Koch) also lives in such surroundings, especially in mosses on fallen tree-truncs.

ACKNOWLEDGEMENTS

My sincere thanks to Mr. Rickard Baranowski, Lund for the drawing of *Tarphius azoricus* and to Dr. A. H. Törnvall for having placed some specimens of *Tharphius azoricus*, *T. acuminatus* and *Mniophilosoma obscurum* at my disposal.

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B O C A G I A N A

Museu Municipal do Funchal

Madeira 22.II.1963 No. 9

NOTES ON TWO MADEIRA PLANTS

By N. C. H. Krauss [1]

The composite plant «Abundância» (*Eupatorium adenophorum* Spreng.) has been known in Madeira for many years. On July 24, 1962 I collected a second species of *Eupatorium*, *E. riparium* Schultz-Bip., confirmed by the Royal Botanic Garden, Kew, England. This was growing in association with *E. adenophorum* in a damp area along a path near Monte. Both these species of *Eupatorium* are native to Mexico. I have seen *E. riparium* growing along a small stream in a ravine at the Desierto de los Leones, Distrito Federal, in the hills above Mexico City. Both species are pests in grazing land in Hawaii.

On November 7, 1960 I collected specimens of *Ulex minor* Roth (determined by Royal Botanic Garden, Kew) in the grassy hills above Ribeiro Frio. Since then I have seen it also at Encumeada and Santo da Serra. *Ulex europaeus* L. has been known in Madeira for a long time, but I have not seen any records of *U. minor*.

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